import cv2

import numpy as np

import matplotlib.pyplot as plt

# Load the image in grayscale (for simplicity)

image = cv2.imread('/content/jerry.jpeg', cv2.IMREAD\_GRAYSCALE)

# Define the Laplacian kernel with diagonal neighbors

laplacian\_kernel = np.array([[ 1, 1, 1],

[ 1, -8, 1],

[ 1, 1, 1]])

# Apply convolution to the image with the Laplacian kernel

laplacian\_image = cv2.filter2D(image, -1, laplacian\_kernel)

# Sharpen the image: original + (original - laplacian\_image)

sharpened\_image = cv2.addWeighted(image, 1.5, laplacian\_image, -0.5, 0)

# Display the images

plt.figure(figsize=(12, 6))

plt.subplot(1, 3, 1)

plt.title('Original Image')

plt.imshow(image, cmap='gray')

plt.axis('off')

plt.subplot(1, 3, 2)

plt.title('Laplacian Image')

plt.imshow(laplacian\_image, cmap='gray')

plt.axis('off')

plt.subplot(1, 3, 3)

plt.title('Sharpened Image')

plt.imshow(sharpened\_image, cmap='gray')

plt.axis('off')

plt.show()

